Australian Government
Australian Institute of Health and Welfare

Developing client-based analyses for reporting on alcohol and other drug treatment services

DRUG TREATMENT SERIES NO. 22

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Authoritative information and statistics to promote better health and wellbeing

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Developing client-based analyses for reporting on alcohol and other drug treatment services

Australian Institute of Health and Welfare
Canberra
Cat. no. HSE 143

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This publication is part of the Australian Institute of Health and Welfare's Drug Treatment Series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 14476746
ISBN 978-1-74249-523-1

Suggested citation
Australian Institute of Health and Welfare 2013. Developing client-based analyses for reporting on alcohol and other drug treatment services. Drug Treatment Series no. 22. Cat. no. HSE 143 . Canberra: AIHW.

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Published by the Australian Institute of Health and Welfare

Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Acknowledgments

Rachel Aalders was the author of this report. Amber Jefferson provided essential advice and guidance. The contributions, comments and advice of the Alcohol and Other Drug Treatment Services National Minimum Data Set Working Group are gratefully acknowledged.

The Australian Government Department of Health supplied funding for this report.

Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
AODTS NMDS	Alcohol and Other Drug Treatment Services National Minimum Data Set
MCDS	Ministerial Council on Drug Strategy
SA	Statistical Area
SEIFA	Socio-Economic Indexes for Areas
SES	Socio-Economic Status
SLK	statistical linkage key
MTT	main treatment type
PDOC	principal drug of concern

Notes

Example analyses contained in this report use fictional data to illustrate the types of output that are possible. No actual data from the AODTS NMDS are used in this report.

Summary

One of the key sources of information on alcohol and other drug treatment services is the Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS NMDS). Publicly funded alcohol and other drug treatment services provide information on treatment episodes for the AODTS NMDS and the *National Drug Strategy 2010–2015* auspices this data collection. The collection began in 2000 and these data have been used to inform state, territory and Australian government policies, a broad range of research activities and treatment service provision.

State, territory and Australian government stakeholders have approved enhancements to the collection, so from 2014 we will provide valuable information for higher quality and more targeted treatment services by:

- counting the number of people accessing alcohol and other drug treatment services in Australia
- exploring patterns of drug treatment people receive
- analysing pathways of clients through treatment.

Counting clients

In 2012–13, a statistical linkage key was introduced into the AODTS NMDS. This linkage key enables the number of clients receiving treatment to be counted while continuing to ensure the privacy of these individuals receiving treatment. Due to anticipated levels of data quality and completeness, the number of clients will be initially estimated using a simple deterministic method. The possibility of including extra data items in the collection will be explored which may lead to a more sophisticated method being adopted in the future.

New analyses

With the introduction of the statistical linkage key, a number of client-based analyses will be possible including:

- estimating the number and rate of clients receiving treatment and the remoteness and socioeconomic distribution of the client in the 2012–13 and 2013–14 annual reports (available mid-2014 and mid-2015, respectively)
- more complex analyses on patterns of drug use and pathways through treatment, as data with unique client counts accumulate over time
- longitudinal analysis to give valuable information on the characteristics of different client groups, for example, those who return to treatment over many years with multiple drugs of concern or treatment types.

Data development

Some analyses described in this report either require, or would be improved by, future data development activities for this collection. These activities will be considered in the context of other possible improvements to data collection to support service planning, policy and evidence priorities as well as available resourcing.

1 Introduction

The Australian *National Drug Strategy 2010–2015* is a cooperative plan between Australian, state and territory governments and the non-government sector. It has an overarching approach of harm minimisation and encompasses 3 pillars: demand reduction, supply reduction and harm reduction. Under this strategy, enhancing the availability and use of data to inform the delivery and evaluation of services and policy is one of the priorities for 2010–2015 (MCDS 2011).

One of the key sources of information on alcohol and other drug treatment services is the Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS NMDS). Publicly funded alcohol and other drug treatment services supply information on treatment episodes for this collection. However, as the collection does not currently contain unique client identifiers, reporting on the data set has been limited to counting closed episodes, rather than distinct clients. As clients can have multiple treatment episodes in a financial year, the number of episodes does not necessarily equate to the number of clients (see AIHW 2013 for further details).

In 2009, the then Australian Government Department of Health and Ageing funded the AIHW to explore the feasibility of introducing a statistical linkage key to enable clients to be counted in the AODTS NMDS. The findings of this project were that it was feasible to implement a statistical linkage key (AIHW 2009), and in 2011, the relevant bodies, including the AODTS NMDS Working Group and National Health Information Standards and Statistics Committee, endorsed the implementation of the Statistical Linkage Key 581 (SLK-581) in the 2012–13 AODTS NMDS.

The purpose of this report is to present options that the AIHW has considered for generating distinct client counts using the SLK-581 and reporting based on distinct numbers of clients. A number of approaches are possible, dependent on the quality and completeness of data that the AIHW received. The report highlights these planned approaches and summarises them in Chapter 2.

The AIHW will consider such reporting approaches in consultation with the Australian Government Department of Health and the AODTS NMDS Working Group during drafting of the 2012–13 AODTS NMDS report (and in future years), in light of the level of completeness of SLK data and other data-quality issues. Data development options will also be considered in the future as opportunities arise.

The AIHW welcomes public and stakeholder feedback on the approaches outlined in this report. If you would like to provide feedback, please email the AIHW at <aod@aihw.gov.au> by Friday 28 February 2014.

This report contains 5 chapters:

- Chapter 1 (this chapter) provides an introduction.
- Chapter 2 gives a list of findings about the generation of linkage keys and the potential analyses based on these identifiers.
- Chapter 3 identifies a method for generating distinct client counts.
- Chapter 4 explores possible client-based analyses.
- Chapter 5 examines the inclusion of the client-based analyses in annual reports and special topic bulletins.

2 Summary of findings

The AIHW has made a number of findings about its intended approach to work relating to statistical methods to count distinct clients in the analysis planned for the 2012–13, 2013–14 and future reports. The AIHW also presents options for possible future data development and analysis for consideration, together with the AODTS NMDS Working Group. These are summarised in Table 2.1 below.

Table 2.1: List of findings for client-based analyses using data on alcohol and other drug treatment services

No.	Type	Finding
1	Method selected	For analysis of 2012–13 AODTS NMDS data, the AIHW will use simple deterministic linkage.
2	Method selected	The AIHW will conduct analysis of future AODTS NMDS collections using a unique identifier at the agency level (resource and data quality dependent).
3	Data development option	The AODTS NMDS Working Group will explore the feasibility of introducing an identifier at the state or territory level that is unique to the client in the AODTS NMDS to allow for the use of key-based linkage to count distinct clients.
4	Planned for 2012–13 data	The AIHW will analyse the number of clients during the year with treatment episodes that were closed in the financial year.
5	Planned for 2012–13 data	The AIHW will analyse existing data (pre-2012–13) to check the proportion of episodes that were active in a particular financial year that are also closed in that year.
6	Planned for 2013–14 data	The AIHW will use information on the proportion of episodes that were active in a particular year and also closed in that year (Finding 5) to inform the value of including analysis of the number of clients on an average day in annual reports.
7	Data development option	The AODTS NMDS Working Group will explore the feasibility of expanding the AODTS NMDS to capture all active episodes in a financial year, not just episodes closed in a financial year.
8	Planned for 2012–13 data	The AIHW will analyse the rate of clients during the year with treatment episodes that were closed in the financial year.
9	Planned for 2013–14 data	The AIHW will use information on the proportion of episodes that were active in a particular year, and also closed in that year, to inform analysis of the rate of clients on an average day.
10	Planned for 2013–14 data	The AIHW will analyse the average number of closed episodes per client.
11	Planned for 2013–14 data	The AIHW will analyse the average length of time clients spent in closed treatment episodes.
12	Planned for 2013–14 data	The AIHW will analyse the remoteness of the client's usual residence (number and rate).
13	Data development option	The AODTS NMDS Working Group will consider the feasibility of including in the AODTS NMDS the Statistical Area of the client's usual residence at the start of the treatment episode.
14	Planned for 2013–14 data	The AIHW will analyse the socioeconomic status of the client's usual residence.
15	Future reports option	The AODTS NMDS Working Group may explore the policy relevance of analyses of patterns of drug use.
16	Future reports option	The AODTS NMDS Working Group may explore the policy relevance of analyses of combinations of patterns of treatment.
17	Future reports option	The AIHW may explore the analysis of pathways through treatment in a thematic bulletin.
18	Future reports option	When enough data are available, the AIHW may include the analysis of pathways through treatment in its annual reports.

3 Counting the number of clients

The main unit of measurement in the AODTS NMDS is the closed (completed) treatment episode (Box 1). As a unit of measurement, the closed treatment episode cannot provide information on the number of clients who access publicly funded alcohol and other drug treatment, nor can it give information on the extent of concurrent, sequential or recurrent service usage. This is because it is possible for a single individual to receive multiple treatment episodes during the reporting period or to access more than one service at a time, for different treatments and for different substance use problems. Data on the number of clients receiving treatment can be considered as well as data on the population of drug users and the population at large to investigate issues such as alcohol and other drug treatment coverage and gaps.

Box 1: Defining closed treatment episodes

The AODTS NMDS has used the closed treatment episode concept as it best reflects clinical practice within the AOD sector and captures quality information on service use. A closed treatment episode may be for a specific treatment that forms part of a longer term treatment plan, for example withdrawal management (detoxification) or it may not, for example information and education only.

Data reported for each treatment episode includes the commencement date, principal drug of concern, treatment type and cessation date. A new treatment episode begins when a different principal drug of concern is identified, a new treatment type begins, the treatment setting changes or an individual has had no contact with the treatment agency for 3 months (unless planned). It is therefore possible for an individual to have more than one episode over a number of years and/or concurrent treatment episodes within one collection year for different substances, or different treatment types or in different settings. For example, a person may be seeking withdrawal management for alcohol use, and also receiving counselling for benzodiazepine use. These may be 2 separate treatment episodes and will appear as separate records in the collection. Further, an individual may access a service (or several) more than once in a collection period and each of these episodes will be reported.

Because of these counting rules, it is not possible to estimate the number of people who access AOD treatment within a reporting period or the pattern of service usage. This limitation also prevents research into how different treatment types fit together to form a treatment plan or pathway.

3.1 Statistical linkage

To provide information on the patterns of service usage by groups of individuals, it is essential to be able to recognise where the same individual is receiving services in different places and at different times. This is particularly the case where those services are recorded in different information systems which are not linked to each other. To protect individual privacy, the individual's names or other directly identifying information is not usually provided for statistical analysis. One method to recognise where the same person is receiving multiple services is by using a statistical linkage key. Statistical linkage gives the ability to

link records with a high degree of certainty without needing an individual's identity (AIHW 2009). For example, by linking records, we can measure the average number of assessments provided to groups of clients with a distinct profile before they move on to another treatment. This information is pivotal to plan service delivery and gain a better understanding of the health issues which this population faces.

3.2 Statistical linkage keys

A statistical linkage key (SLK) is a combination of items that contains enough information to link records for statistical analysis, but does not contain enough information to re-identify individuals. An SLK can be used within a data collection to count the number of clients (the purpose explored in this report), or it can be used between data sets to link records relating to the same person.

SLKs are typically used where a nationally unique client identifier or where full name and demographic data are not available. This may be because these data are not collected or because they are not provided to the agency undertaking statistical analysis due to privacy considerations. In the AODTS NMDS, nationally unique client identifiers are not available and an SLK was introduced to maintain client privacy.

The SLK implemented in the AODTS NMDS is known as the Statistical Linkage Key 581 (SLK-581), so-named because it contains:

- 5 letters of a person's name—second, third and fifth letters of family name and second and third letters of given name
- 8 digits of date of birth—ddmmyyyy
- 1 digit for sex (1 = male, 2 = female).

For example, Mary Brown, born on 1 July 1958, would have an SLK-581 of RONAR010719582.

The SLK-581 is used in a number of community services data collections, including the Specialist Homelessness Services Collection, the Disability Services NMDS, the Juvenile Justice NMDS and the Child Protection NMDS.

The AODTS NMDS also contains a date accuracy indicator, which was implemented with the SLK-581. This indicates the extent to which the date of birth (day, month and year) is accurate, estimated or unknown and can be used to improve the use of the SLK-581.

There are several ways to use SLKs to link records that belong to the same person. These methods range from those that need few resources but may result in links being missed, to more complex methods that can discover nearly all links but require vast resources. The choice of method often depends on the availability of more data beyond the SLK-581.

3.3 Methods of linking records belonging to the same client

Simple deterministic method

The simple deterministic method used to link records is based on exact agreement or matching of the linkage variables such as a linkage key. Simple (one-step) deterministic record linkage cannot allow for variation in reporting. An example is linking 2 data sets based solely on the exact agreement of the SLK-581 only (AIHW 2011).

The simple deterministic method needs the fewest resources and relies on the assumption that distinct SLKs relate to distinct people. A simple deterministic method will have a high rate of success where:

- the key used is adequately distinctive, which means that it has a low rate of false positives (where records that actually belong to different people are incorrectly found to belong to the same person) and a high rate of true negatives (where records that actually belong to different people are correctly shown to belong to different people)
- the population reports components of the SLK in a consistent manner and these are accurately recorded, which means it has a high rate of true positives (where records that actually belong to the same person are correctly found to belong to the same person) and a low rate of false negatives (where records that actually belong to the same person are incorrectly shown to belong to different people).

Previous work has shown that the SLK-581 is adequately distinctive—in most circumstances, relatively few people will share the same SLK-581 combination (AIHW: Ryan et al. 1999). However, the components used in the SLK-581 mean that false positives and negatives can be introduced both where clerical errors are made (such as where a date of birth is recorded incorrectly) and in populations where people are likely to change their name or use aliases. For example, if Mary Smith born 1 July 1958 changes her last name to Brown, the values for the last name component of the SLK-581 will change, with the result that her SLK-581 combinations will change from RONAR010719582 to MIHAR010719582. For this client, the deterministic method would result in a false negative, in which her records are incorrectly found to belong to 2 different women.

Key-based linkage method

An enhanced version of the simple deterministic method is the key-based linkage method (previously known as the step-wise deterministic linkage method), which improves the quality of the results while still maintaining privacy.

The AIHW developed this method and it uses both components of the SLK-581 and added distinguishing variables such as postcode or Indigenous status to create a series of linkage keys (AIHW 2011, 2012; Karmel et al. 2010).

In these keys, components are systematically varied to account for people whose components vary, so for example if a person's last name or other components have changed over time, their records can still be linked. This method can also account for records with missing components, including incomplete SLK-581s, but it does require considerably more resources than simple deterministic linkage.

This method achieves its 3 aims (using all available data, having few false links and having few missed links) through the use of a step-wise approach that involves linking using the most precise linkage key before using the next most precise linkage key, and so on.

This method was found to be effective in discerning true links among aged care data sets (AIHW 2011). Nearly all (99.7%) of the links identified by this method were also identified by the name-based linkage strategy with clerical review (considered to be 'true' links), while the method identified 98.5% of all links made by the name-based linkage strategy.

This method works best with a unique person identifier at a sub-national level or a combination of variables at a sub-national level that can be assumed to be unique (if the identifier was unique at the national level, there would be no need to generate further client identifiers).

3.4 Options for the AODTS NMDS

The AIHW has considered 3 methods for the AODTS NMDS:

- simple deterministic linkage
- key-based linkage using a unique identifier (or one assumed to be unique) at the state and territory level
- key-based linkage using a unique identifier at the agency level.

Each approach has advantages and disadvantages for the AODTS NMDS relating to accuracy, complexity and cost. The more accurate the client count, the more reliable the conclusions based on that count will be.

Simple deterministic linkage has the advantage of requiring relatively few resources, but it will result in an overestimation of the number of clients where people have changed their names or components are recorded inconsistently.

The client population for alcohol and other drug treatment services are typically of an age where people are likely to get married and possibly change their last names. However, this is less likely for the AODTS NMDS as the majority of treatment episodes are for males who are unlikely to change their name after marriage.

Clients accessing these services may use aliases to maintain privacy or avoid criminal surveillance. For this reason, a deterministic method may result in an overestimation of the number of distinct clients, as records belonging to the same person would be identified as belonging to different people. In addition, any records with incomplete SLK-581s or where the date accuracy indicator shows that the date of birth is inaccurate cannot be linked using simple deterministic linkage. Analysis of pilot data supplied for the 2009 AODTS NMDS enhancement project found that 27% of records had incomplete SLK-581s (AIHW 2009).

Key-based linkage using a unique identifier at the state and territory level needs more resources than simple deterministic linkage but is less likely to overestimate client numbers as it can accommodate situations in which components have changed (for example, people have used different names). This is particularly a major issue for longitudinal analysis over a number of years as the more time passes, the more likely it is that components will have changed. However, there is no identifier at the state or territory level that is unique to the client in the AODTS NMDS, and it is not reasonable to assume a combination of variables (such as the SLK-581) at the state and territory level would uniquely identify a client.

Key-based linkage using a unique identifier at the agency level would require the most resources for 2 reasons: the large number of treatment agencies in the AODTS NMDS (between 600 and 700 each year) and the lack of stability in agency numbers. This would mean that this method would need to be able to dynamically adjust to changes in agency numbers each year to avoid extensive resource-intensive manual changes to the programs used to generate linkage keys. This method is, however, a possibility because the AODTS NMDS contains a person identifier that is required to be unique at the agency level, although this data element is not validated.

Finding 1

Method selected: For analysis of 2012–13 AODTS NMDS data, the AIHW will use simple deterministic linkage.

Finding 2

Method selected: The AIHW will conduct analysis of future AODTS NMDS collections using a unique identifier at the agency level (resource and data quality dependent).

Finding 3

Data development option: The AODTS NMDS Working Group will explore the feasibility of introducing an identifier at the state or territory level that is unique to the client in the AODTS NMDS to allow for the use of key-based linkage to count distinct clients.

After linkage keys have been generated using either method, it will be possible that records deemed to belong to the same person will have some variation in demographic information (for example, in 1 record the date of birth might be 1 November 1975, while in another record it might be 11 November 1975). As no source of information is known to be the most 'trustworthy', any conflicting sets of demographic information will be resolved by randomly selecting one set.

4 Client-based analyses

Once distinct clients can be counted, there are 2 common ways to examine the number of clients receiving treatment services are the number who receive treatment on an average day (similar to a 'snapshot' day), and the number who receive treatment during a year.

The average day measure reflects the number of people in alcohol and other drug treatment on a typical day during the year, and gives an indication of the *average* number of people in the alcohol and other drug treatment system at any one time. It is a summary measure which reflects both the number of people receiving treatment, and the amount of time they spent in treatment. In contrast, the 'during the year' measure is a count of the number of unique individuals who received treatment at any time during the year. Each method gives the reader a slightly different perspective on service use.

4.1 Client numbers

The AODTS NMDS is based on treatment episodes that are closed in a financial year (see Box 1). This means that for the current year of data, client numbers and rates will refer only to those who have had at least one treatment episode closed in that year.

Over time, it will be possible to estimate the total number of clients who received treatment in previous financial years. For example, a treatment episode that was opened on 21 October 2010 and closed 3 May 2012 will have been submitted to the AODTS NMDS in 2011–12, as this is the year in which it was closed. That this episode was opened and active in 2010–11 will only be known when data for 2011–12 are finalised (see Table 4.1 for examples). Analysis of available data would indicate how many years need to elapse before most or all of the episodes active in a particular financial year (not just those that were closed) are captured in the AODTS NMDS.

Table 4.1: EXAMPLE ONLY Treatment episodes by financial years opened, closed and active

Start date	End date	Opened	Closed	Active
1/08/2010	2/02/2011	2010–11	2010–11	2010–11
21/10/2010	3/05/2012	2010–11	2011–12	2010–11, 2011–12
20/01/2011	5/12/2012	2010–11	2012–13	2010–11, 2011–12, 2012–13

During the year

Clients receiving treatment from a publicly funded treatment agency are grouped into those who received treatment for their own drug use and those where the drug use was that of another person.

The number of clients during the year with treatment episodes that were closed in the financial year is calculated by counting each distinct person only once during the financial year, even if they had multiple episodes that were closed in the financial year. For the number of clients who received treatment during the year, components may not sum to the total since people may receive treatment as different types of clients during the year (Figure 4.1).

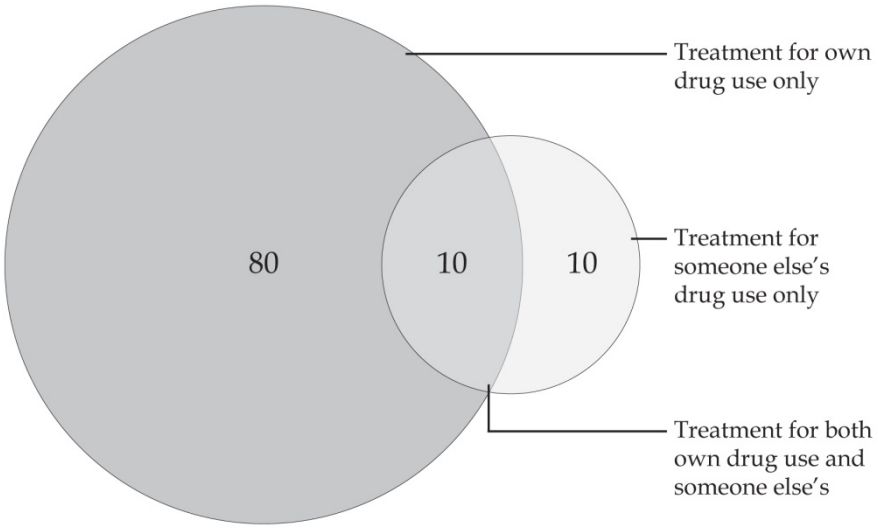

Figure 4.1: EXAMPLE ONLY Overlap between clients receiving treatment for their own drug use and those receiving treatment for someone else's drug use, 2012–13

On an average day

The number of clients on an average day with treatment episodes that were closed in the financial year is calculated by summing the number of days each client spends in closed treatment episodes during the financial year and dividing this total by the number of days in the financial year. As the AODTS NMDS only contains closed treatment episodes, this measure would be an underestimation of the level of activity on any given day.

As noted above, it is possible to analyse existing data to measure how many years of data are needed before all the episodes active in a particular financial year (not just those that were closed) are captured in the AODTS NMDS. This analysis would measure the proportion of episodes that were active in a particular financial year that were also closed in that year. If the proportion were sufficiently high (for example, if 90% or more of the episodes active in 2012–13 were also closed in 2012–13), then it may be worthwhile including analyses such as number of clients on an average day in the annual reports, as this indicates that the average day measure is an accurate estimation of actual treatment provided. However, if, for example, analysis of previous years' data showed that on average only 50% of episodes that were active in a financial year were also closed in that financial year, then including data on the number of clients on an average day for the current collection year in annual reports would not give useful information as the measure would greatly underestimate the total volume of treatment provided.

Finding 4
Planned for 2012–13 data: The AIHW will analyse the number of clients during the year with treatment episodes that were closed in the financial year.

Finding 5
Planned for 2012–13 data: The AIHW will analyse existing data (pre-2012–13) to check the proportion of episodes that were active in a particular financial year that are also closed in that year.

Finding 6
Planned for 2013–14 data: The AIHW will use information on the proportion of episodes that were active in a particular year and also closed in that year (Finding 5) to inform the value of including analysis of the number of clients on an average day in annual reports.

Finding 7
Data development option: The AODTS NMDS Working Group will explore the feasibility of expanding the AODTS NMDS to capture all active episodes in a financial year, not just episodes closed in a financial year.

Example analysis

In 2012–13, 101,233 people were clients of alcohol and other drug treatment services in Australia, and most (72%) were male (Table 4.2). Seven per cent of clients received services in more than one state or territory, and this proportion was similar for both males and females.

In all states, clients were more likely to be male than female; this ranged from 79% of clients in State 4 to 67% in State 1.

Table 4.2: EXAMPLE ONLY Clients receiving alcohol and other drug treatment services during the year by sex, states and territories, 2012–13

Sex	State 1	State 2	State 3	State 4	Australia
Male	20,153	36,151	12,153	8,988	72,566
Female	9,866	12,548	5,698	2,455	28,667
Total	30,019	48,699	17,851	11,443	101,233

Note: Australian total does not equal sum of states and territories as some clients receive services in multiple states or territories.

4.2 Client rates

Exploring the relationship between the number and type of people in treatment and both the drug-using population and the population at large enables better understanding of how these populations differ and where treatment gaps may exist. Calculation of client population rates, both for the general population and for the drug-using population, allows for this comparison to be made (see Box 4.1).

Box 4.1: Calculation of treatment rate

$$Treatment\ rate = \frac{people\ receiving\ treatment}{people\ in\ the\ population}$$

For males aged 20–30 who use drugs:

$$Treatment\ rate{:}\ male\ recent\ users\ aged\ 20-30 = \frac{number\ of\ males\ aged\ 20-30\ receiving\ drug\ treatment}{number\ of male\ recent\ users\ aged\ 20-30}$$

This number is then expressed as a population rate, usually per 10,000 or 100,000.

As with the number of clients, the client rates will refer only to those who have had at least one treatment episode that was closed in the relevant year (see Section 4.2 for more details).

Rates can be compared by calculating the ratio of the 2 rates. Rate ratios are typically used to compare Indigenous and non-Indigenous rates and to give a measure of the level of Indigenous representation, but these can be used for other populations as well, for example, to compare male and female rates. These rate ratios are accompanied by crude rates to guide interpretation so that both the relationship between groups and the actual size of the issue can be explored.

One of the challenges in measuring rate ratios for Indigenous clients is that they may receive treatment from agencies funded by the Office for Aboriginal and Torres Strait Islander Health, many of which do not supply data to the AODTS NMDS. Indigenous rates will be underestimated where this occurs.

Example analysis

In general, rates of treatment for someone else's drug use rose as the age group increased, peaking for those aged 50–59 (Figure 4.2). Someone aged 50–59 was almost 2 times as likely as someone aged 30–39 to receive treatment for someone else's drug use, and almost 4 times as likely as someone aged 20–29. In all age groups, except those aged 10–19, females were more likely than males to receive treatment for someone else's drug use.

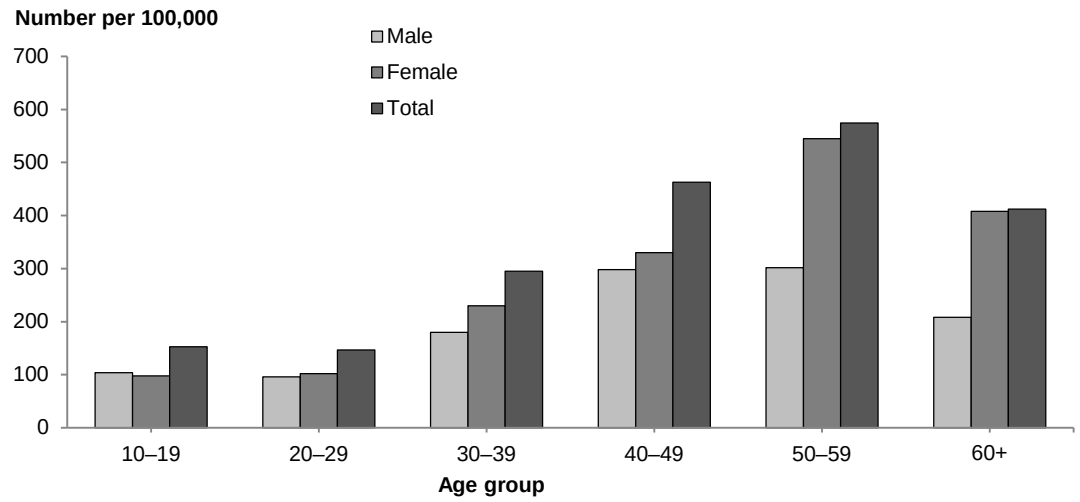

Figure 4.2: EXAMPLE ONLY Clients receiving treatment for someone else's drug use during the year by sex, states and territories, 2012–13 (rate)

Finding 8

Planned for 2012–13 data: The AIHW will analyse the rate of clients during the year with treatment episodes that were closed in the financial year.

Finding 9

Planned for 2013–14 data: The AIHW will use information on the proportion of episodes that were active in a particular year and also closed in that year to inform analysis of the rate of clients on an average day.

4.3 Time in treatment

Better evidence about the length of time clients spend in treatment will enhance understanding of client retention and outcomes. Generating linkage keys will enable all episodes relating to a particular client to be counted and measures of time in treatment to be calculated. Analyses can include the average number of closed treatment episodes and the total time spent in treatment during the year (when all treatment episodes are combined).

Example analysis

Nationally, the median length of closed episodes for the client's own drug use was almost 16 weeks (113 days), and this ranged from just over 14 weeks (100 days) in State 2 to 18 weeks (126 days) in State 4. Clients had, on average, 1.6 closed episodes during 2013–14; this ranged from 1.1 in State 1 to 2.4 in State 2.

Overall, there was an inverse relationship between the median length of closed episodes and the average number of closed episodes per client during the year. State 2 had the shortest median length of closed episodes and one of the highest average number of closed episodes per client, while states 1 and 4 had the longest median lengths of closed episodes and the lowest average number of closed episodes per client.

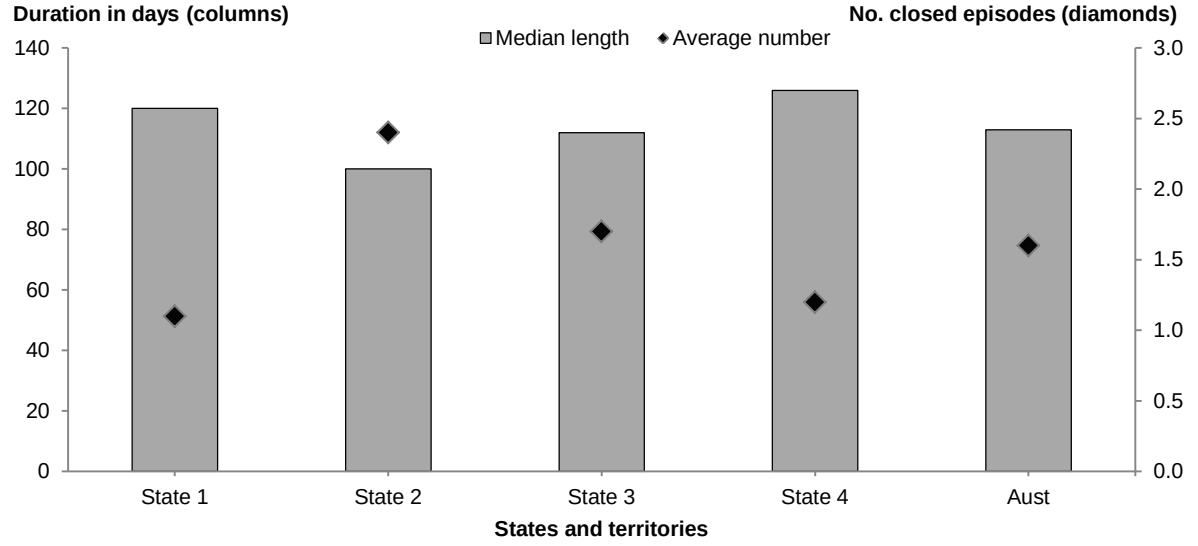

Figure 4.3: EXAMPLE ONLY Closed treatment episodes for clients receiving treatment for their own drug use by median length and average number per client, states and territories, 2013–14

Nationally, clients receiving treatment for someone else's drug use spent, on average, 6 weeks (44 days) in this type of treatment (Figure 4.4). This ranged from 5 weeks (35 days) in State 3 to 10 weeks (71 days) in State 2. In all states and territories except State 4, females spent longer in treatment than males—nationally, females spent 8 more days in treatment during the year than males. Further investigation of this finding is likely to produce better evidence on why some clients are more likely than others to stay in treatment.

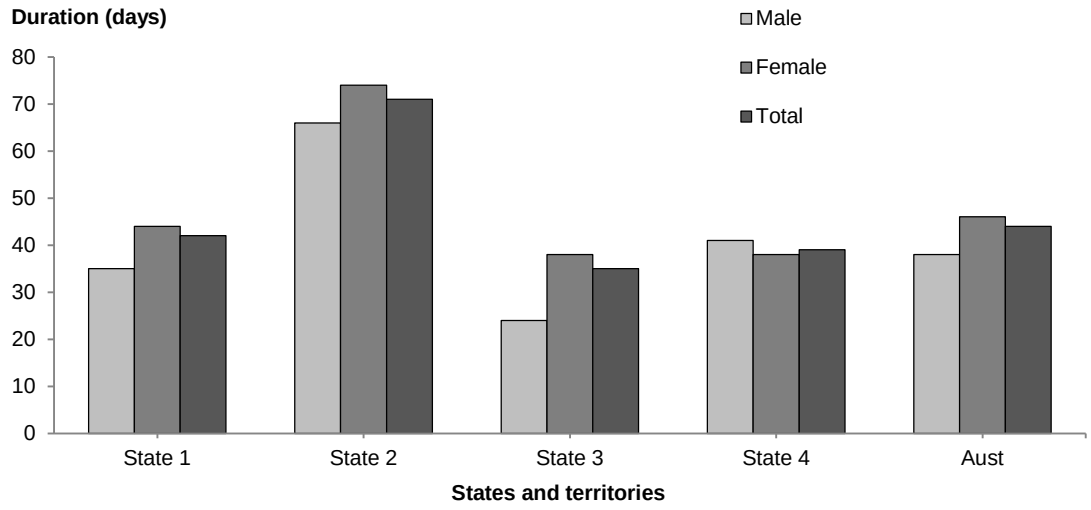

Figure 4.4: EXAMPLE ONLY Average length of time spent in closed treatment episodes during the year for clients receiving treatment for someone else's drug use, states and territories, 2013–14 (days)

Finding 10

Planned for 2013–14 data: The AIHW will analyse the average number of closed episodes per client.

Finding 11

Planned for 2013–14 data: The AIHW will analyse the average length of time clients spent in closed treatment episodes.

4.4 Remoteness of usual residence

The remoteness of a location can be analysed using the ABS Australian Statistical Geography Standard Remoteness Structure (ABS 2011). In this classification, remoteness is based on road distance measurements to the nearest urban centre, where the population size of the urban centre is assumed to affect the availability of goods and services. Areas that share common characteristics of remoteness are classified into:

- *Major cities*
- *Inner regional*
- *Outer regional*
- *Remote*
- *Very remote.*

The postcode of the client's usual residence at the start of treatment will be implemented in the 2013–14 AODTS NMDS collection period. This will allow the remoteness of usual residence to be assessed, although more robust results would be found using the Statistical Area 2 (SA2) of the client's usual residence as Statistical Area boundaries are more likely than postcodes to align with remoteness areas.

Example analysis

Nationally, people from *Major cities* were most likely to receive alcohol and other drug treatment services, while those from *Very remote* areas were least likely (Figure 4.5). During 2013–14, there were 108 people receiving services for every 100,000 in the population in *Major cities*, compared with 42 per 100,000 in *Very remote* areas.

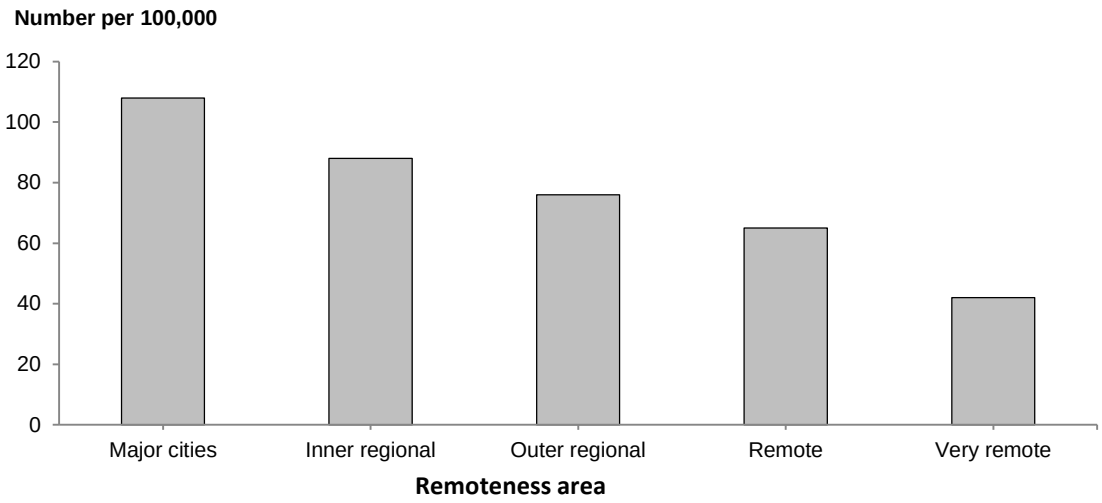

Figure 4.5: EXAMPLE ONLY Clients receiving alcohol and other drug treatment services during the year by remoteness of usual residence, Australia, 2013–14 (rate)

Analysis of this type, along with data on drug use in the population, will give valuable information on geographic patterns of service use across Australia. Issues such as distance travelled to treatment (either because treatment is unavailable closer to the client or to protect privacy) could be useful in reviewing access to services.

Finding 12

Planned for 2013–14 data: The AIHW will analyse the remoteness of the client's usual residence (number and rate).

Finding 13

Data development option: The AODTS NMDS Working Group will consider the feasibility of including in the AODTS NMDS the SA2 of the client's usual residence at the start of the treatment episode.

4.5 Socioeconomic status of usual residence

The socioeconomic status of a location can be estimated using the ABS Socio-Economic Indexes for Areas (SEIFA). The SEIFA comprises 4 indexes that are constructed using information from the 5-yearly Census of Population and Housing. These 4 indexes are:

- the Index of Relative Socio-Economic Disadvantage
- the Index of Relative Socio-Economic Advantage and Disadvantage

- the Index of Economic Resources
- the Index of Education and Occupation.

These indexes represent the average of all people living in the area, and not the socioeconomic status (SES) of a particular individual living in that area. Therefore, analyses using the SEIFA indicate the SES of the area of the usual residence, not the SES of the client or their family.

The postcode of the client's usual residence at the start of treatment will be implemented in the 2013–14 AODTS NMDS collection period. This will allow the SES of usual residence to be estimated, although more robust results would be found using the Statistical Area 2 (SA2) of the client's usual residence.

Example analysis

There was no strong relationship between the SES of usual residence and receiving treatment for own drug use (Figure 4.6). Those from the areas of lowest SES were 1.3 times as likely to be receiving treatment as those from the areas of highest SES, but overall, those from areas of intermediate SES were most likely to be receiving treatment.

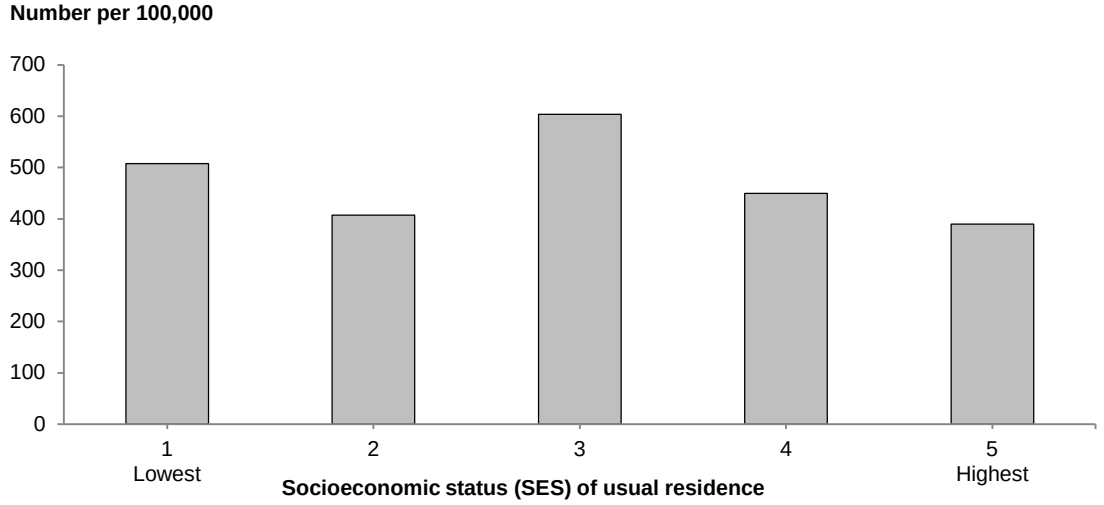

Figure 4.6: EXAMPLE ONLY Clients receiving treatment for their own drug use during the year by socioeconomic status of usual residence, Australia, 2013–14 (rate)

Finding 14

Planned for 2013–14 data: The AIHW will analyse the socioeconomic status of the client's usual residence (number and rate).

4.6 Patterns of drug use

In the AODTS NMDS, the closure of a treatment episode can be triggered by a number of events such as a change in the main treatment type. This means that an unbroken period of treatment may be separated into multiple episodes (discrete periods with defined dates of commencement and cessation), even if the drugs of concern, such as the principal drug of concern, remain unchanged. With the introduction of linkage keys, it will be possible to count these periods of treatment by joining abutting treatment episodes.

For example, a client has:

- Episode 1: A principal drug of alcohol and a main treatment type of counselling from 1 March to 15 March
- Episode 2: A principal drug of alcohol and a main treatment type of withdrawal management from 16 March to 27 March
- Episode 3: A principal drug of cannabis and a main treatment type of withdrawal management from 27 March to 15 April
- Episode 4: A principal drug of alcohol and a main treatment type of counselling from 1 June to 25 June.

These 4 episodes can be aggregated in several ways (Figure 4.7).

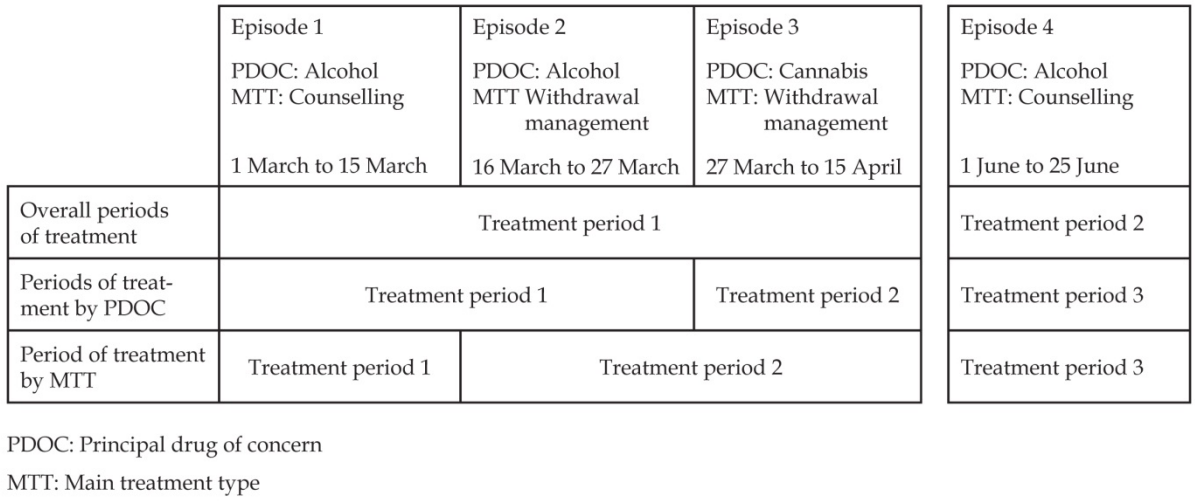

Figure 4.7: EXAMPLE ONLY Treatment period examples by combining abutting treatment episodes

To date, reporting on treatment services has focused on the number of episodes by drug type. With the introduction of the linkage key it will be possible to count the number of clients and the number of treatment periods by drug type. As periods of treatment can be broken into multiple periods of episodes even where the principal drug of concern remains unchanged, the addition of periods of treatment can give more information on the profile of drugs of concern. This would give a more cohesive (less fractured) picture about treatment for a particular drug.

Distinct client counts can also be used to explore the combinations of drugs of concern (for example, the client had 2 principal drugs of concern: alcohol and cannabis), while the length

of treatment periods can be used to explore the total time in treatment for different types of drugs.

Example analysis

In 2012–13, alcohol remained the most common principal drug of concern both when individual client episodes and treatment periods were considered.

More specifically, over 90,000 closed treatment episodes had alcohol as a principal drug of concern, followed by cannabis (almost 65,000 episodes) (Figure 4.8).

When episodes with the same principal drug of concern are joined to form treatment periods, alcohol remained the most common principal drug of concern (around 30,000 periods, with an average of 3 episodes per period), but amphetamines were the second most common (almost 18,000 periods, with an average of 2 episodes per period). Although relatively few episodes had nicotine as the principal drug of concern, it was the most common principal drug of concern when distinct clients were considered. Almost 15,000 clients had nicotine as a principal drug of concern in one or more episodes closed in 2012–13, compared with almost 8,000 clients who had alcohol as a principal drug of concern in one or more episodes.

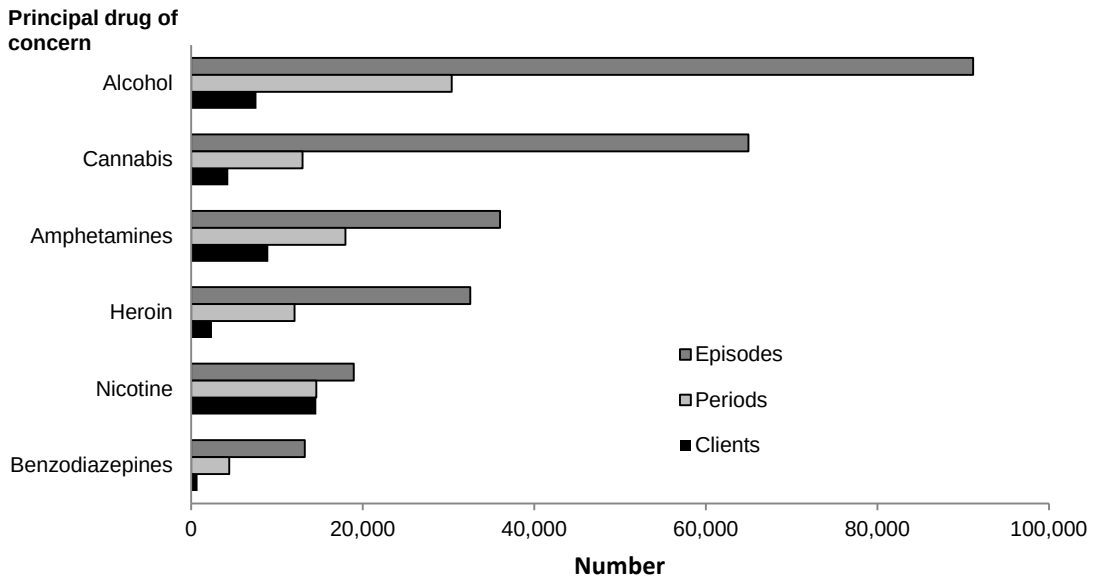

Figure 4.8: EXAMPLE ONLY Most common principal drugs of concern by closed episodes, treatment periods and clients, Australia, 2012–13

Of clients reporting heroin as their principal drug of concern, most (97%) had no or only one additional drug of concern (Figure 4.9).

More specifically, of the 2,410 clients who had heroin as a principal drug of concern in 2012–13, 33% had no other principal drugs of concern in 2012–13. A further 27% had only benzodiazepines as principal drug of concern in addition to heroin during 2012–13, while 22% had only cannabis as an additional principal drug of concern. Just 3% of clients with heroin as a principal drug of concern also had more than 1 additional principal drug of concern.

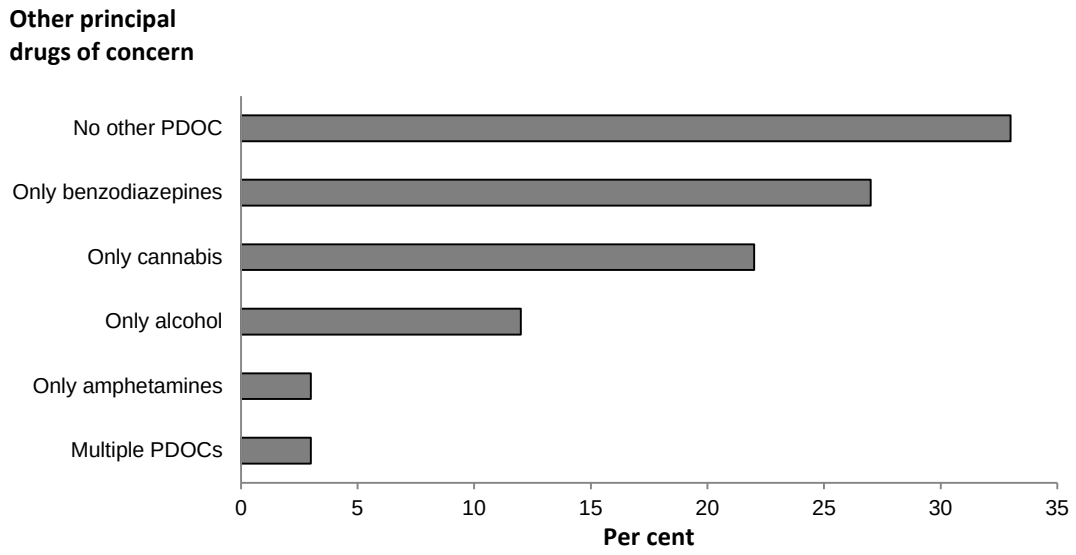

Figure 4.9: EXAMPLE ONLY Clients with heroin as a principal drug of concern by other principal drugs of concern (PDOC) during the year, Australia, 2012–13

Finding 15

Future reports option: The AODTS NMDS Working Group may explore the policy relevance of analyses of patterns of drug use.

4.7 Patterns of treatment

Patterns of treatment types can be analysed in similar ways to drugs of concern (see previous section for details).

Finding 16

Future reports option: The AODTS NMDS Working Group may explore the policy relevance of analyses of combinations of patterns of treatment.

4.8 Pathways through treatment services

As data for which distinct client counts can be generated accumulate over time, it will be possible to examine pathways through treatment. This could include:

- **analysing the drug and treatment pathways to treatment for a particular drug**. For example, pathways to receiving treatment for heroin use could be explored by analysing the drugs for which a cohort of clients received treatment in the years before receiving treatment for heroin use.
- **analysing the pathways to treatment 'completion'**. For example, completion could be defined as when a client has not returned to treatment for at least 1 year (or another time frame).
- **analysing typical pathways that occur for clients of a particular age, or who have a particular drug of concern**, over a specified period of time. For example, analysing the top 10 most common pathways (treatment types and drugs of concern) over 5 years for clients whose principal drug of concern in 2013–14 was alcohol.
- **analysing the proportion of clients who return to treatment after a period of time and comparing them with those who do not return to treatment.**

Finding 17

Future reports option: The AIHW may explore the analysis of pathways through treatment in a thematic bulletin.

Finding 18

Future reports option: When enough data are available, the AIHW may include the analysis of pathways through treatment in annual reports.

5 Reporting options

5.1 Annual reports

The AIHW currently produces annual reports based on alcohol and other drug treatment services reported through the AODTS NMDS. These annual reports currently cover information on treatment agencies, drugs of concern and types of treatment provided to clients. Demographic and other information about clients is also presented. As distinct client counts have not been available previously, this information has related to treatment episodes, not to distinct clients.

With the introduction of linkage keys, and based on the findings in Chapter 4, the following changes will be introduced in upcoming annual reports (dependent on data quality):

2012–13 annual report:

- number of clients during the year with treatment episodes closed in the financial year
- rate of clients during the year with treatment episodes closed in the financial year.

2013–14 annual report:

- average number of closed episodes per client
- average length of time clients spent in closed treatment episodes
- remoteness of client's usual residence (number and rate)
- socioeconomic status of client's usual residence (number and rate).

5.2 Thematic bulletins

Thematic bulletins are a useful means of exploring special topics and the feasibility and policy relevance of analyses before inclusion in annual reports. From the findings in Chapter 4, the following analyses are suggested for thematic bulletins in future years which could be prioritised by jurisdictions:

Patterns of drug use, including:

- combinations of drugs of concern across treatment episodes
- total time in treatment during the year by drug of concern.

Patterns of treatment, including:

- types of treatment: combinations of treatment types across treatment episodes
- total time in treatment by type of treatment.

Pathways through treatment services, including:

- analysing the drug and treatment pathways to treatment for a particular drug
- analysing the pathways to treatment 'completion'
- analysing typical pathways for a cohort of clients over a specified period of time (for example, for clients with the same drug of concern)
- analysing the proportion of clients who return to treatment after a period of time and comparing the characteristics of these clients with those who do not return to treatment.

Glossary

client type: clients receiving treatment from a publicly funded treatment agency are grouped into those who received treatment for their own drug use and those where the drug use was that of another person.

combination: the result of combining the components required for a particular key. For example, the combination for the SLK-581 [F3G2D2M2Y4S1] for Mary Brown born 1 July 1958 is RONAR010719582.

component: the variables that form a particular linkage key. For example, the SLK-581 has the components: letters of family name, letters of given name, date of birth and sex.

deterministic record linkage: the linkage of records is based on exact agreement or matching of the linkage variables such as a linkage key. Simple (one-step) deterministic record linkage cannot allow for variation in reporting. For example, linking 2 data sets based solely on the exact agreement of the SLK-581 only. However, deterministic linkage can be constructed to allow for variation in linkage elements (AIHW 2011). For example, distinguishing data (such as postcode) can be used in addition to a linkage key to improve successful matching of records. This method is often referred to as step-wise or key-based linkage.

letters of family name: the combination of the second, third and fifth letters of a person's family name. For example, 'Thompson' results in HOP; 'Brown' results in RON. Non-alphabetic characters (for example, blank spaces or hyphens) are ignored when counting the position of each character. Where a family name contains fewer than 5 letters, a '2' is substituted for the missing letters.

letters of given name: the combination of the second and third letters of a person's given name. For example, 'Elizabeth' results in LI; 'Robert' results in OB. Non-alphabetic characters (for example, blank spaces or hyphens) are ignored when counting the position of each character. Where a given name contains fewer than 3 letters, a '2' is substituted for the missing letters.

main treatment type: the main activity determined at assessment by the treatment provider to treat the client's alcohol and/or drug problem for the principal drug of concern.

principal drug of concern: the main drug, as stated by the client, that has led a person to seek treatment from the service.

statistical linkage key (or linkage key): a variable that consists of the concatenation of specified components. For example, a linkage key formed from the concatenation of the date of birth component and the sex component would be the linkage key [D2M2Y4S1].

treatment episode: a defined period of contact, with defined dates of commencement and cessation, between a client and a treatment provider or team of providers in which there is no change in the main treatment type or the principal drug of concern, and there has not been a non-planned absence of contact for greater than 3 months. A treatment episode is considered closed where:

- the treatment is completed or has ceased
- there has been no contact between the client and treatment provider for 3 months
- there is a change in the main treatment type, principal drug of concern or delivery setting.

References

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AIHW 2011. Comparing an SLK-based and a name-based data linkage strategy: an investigation into the PIAC linkage. Cat. no. CSI 11. Canberra: AIHW.

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AIHW 2013. Alcohol and other drug treatment services in Australia 2011–12. Drug treatment series no. 21. Cat. no. HSE 139. Canberra: AIHW.

AIHW: Ryan T, Holmes B & Gibson D 1999. A National Minimum Data Set for Home and Community Care. Aged care series. Cat. no. AGE 13. Canberra: AIHW.

Karmel R, Anderson P, Gibson D, Peut A, Duckett S & Wells Y 2010. Empirical aspects of record linkage across multiple data sets using statistical linkage keys: the experience of the PIAC cohort study. BMC Health Services Research 10.

MCDS (Ministerial Council on Drug Strategy 2011). The National Drug Strategy 2010-2015. Canberra: Commonwealth of Australia.

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Related publications

This publication, as well as other reports in this series, can be downloaded for free from the AIHW website, <www.aihw.gov.au/alcohol-and-other-drugs-publications/>. The website also includes information on ordering printed copies.

The following AIHW reports relating to alcohol and other drug use might also be of interest:

- AIHW 2013. Alcohol and other drug treatment services in Australia 2011–12. Drug treatment series 21. Cat. no. HSE 139. Canberra: AIHW.
- AIHW 2013. National opioid pharmacotherapy statistics annual data collection 2012 report. Drug treatment series no. 15. Cat. no. HSE 136. Canberra: AIHW.
- AIHW 2011. 2010 National Drug Strategy Household Survey report. Drug statistics series no. 25. Cat. no. PHE 145. Canberra: AIHW.
- AIHW 2011. Drugs in Australia 2010: tobacco, alcohol and other drugs. Drug statistics series no. 27. Cat. no. PHE 154. Canberra: AIHW.

Developing client based analysis for reporting on alcohol and other drug treatment services outlines AIHW intended analysis techniques to:

- estimate the number and rate of clients receiving alcohol and other drug treatment
- explore patterns of drug use and pathways through treatment
- explore the characteristics of different client groups, for example, those who return to treatment over many years with multiple drugs of concern or treatment types.

Some analyses described either require, or would be improved by, future data development activities for this collection. Public consultation is open until 28 February 2014.